YAMAHA

WAVEFORCE Series

SPEAKER SYSTEMS

WF206/WF112/WF112F
WF115/WF115F/WF112M

SUBWOOFER

WF215SB

OPERATING MANUAL
MANUEL D'UTILISATION
BEDIENUNGSANLEITUNG

Contents

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*Thank you very much for purchasing a YAMAHA speaker system.
To obtain maximum performance from your YAMAHA speaker system and ensure trouble-free operation for many years, we recommend that you read this operating manual thoroughly before use.*

Precautions

◆ **AVOID EXCESSIVE HEAT, HUMIDITY, DUST AND VIBRATION**

Keep the speaker away from locations:

- Where they may be exposed to the direct sunlight, high temperatures (such as near stoves), or excessively low temperatures,
- Where they may be exposed to high humidity,
- Which are subject to excessive dust accumulation or vibration, and
- Which are not level or stable.

◆ **USING THE HANGING HOOK**

When you set up this speaker system as a flying system, read the instruction about the "Hanging Hook" on page 4 of this operating manual, and use the system in the specified manner.

◆ **MAKE SURE POWER IS OFF BEFORE MAKING OR REMOVING CONNECTIONS**

Always turn the power OFF of system components prior to connecting or disconnecting cables.
This is important to prevent damage to the unit itself as well as other connected equipment.

◆ **DISCONNECT CABLES BEFORE MOVING THE SYSTEM**

Always disconnect cables prior to moving the system in order to prevent short circuit or breakage of the cables.

◆ **ABOUT POLARITY**

When using more than two speaker systems, make sure to match the polarity (+, –) of the speaker systems and the amplifier. If the polarity does not match, the sounds produced by the speakers will interfere with each other and a well-balanced sound field cannot be obtained.

◆ **CLEANING THE EXTERIOR**

Do not clean the exterior using volatile liquids such as benzine or thinner and avoid the use of aerosol sprays near the speaker system. Always use a dry, soft cloth for cleaning the exterior.

◆ **KEEP THIS OPERATING MANUAL IN A SAFE PLACE FOR FUTURE REFERENCE.**

For protection of your speakers

When choosing a suitable power amplifier, make sure that its power output matches the power capacity of the speaker (refer to Specifications).
Even if the power output of the amplifier is lower than the PGM (Program) power capacity of the speaker, the speaker may be damaged when clipping of a high input signal occurs.

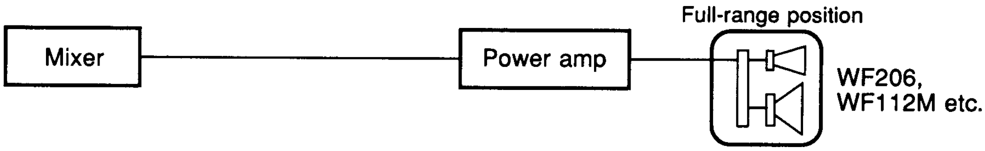
The following may cause damage to the speaker:

- Feedback caused when using a microphone.
- A continuous high-power sound produced by an electronic instrument.
- Continuous high-power output of an abnormally distorted signal.
- Popping noise caused by turning on and connecting or disconnecting peripherals while the amplifier is turned on.

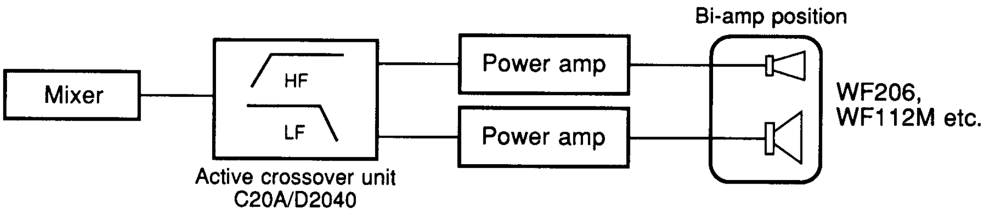
■ Connections (Note: Impedance of WF215SB/WF206 is 4 ohms. Do not connect in parallel.)

● Using as single unit

(1) Full-range configuration

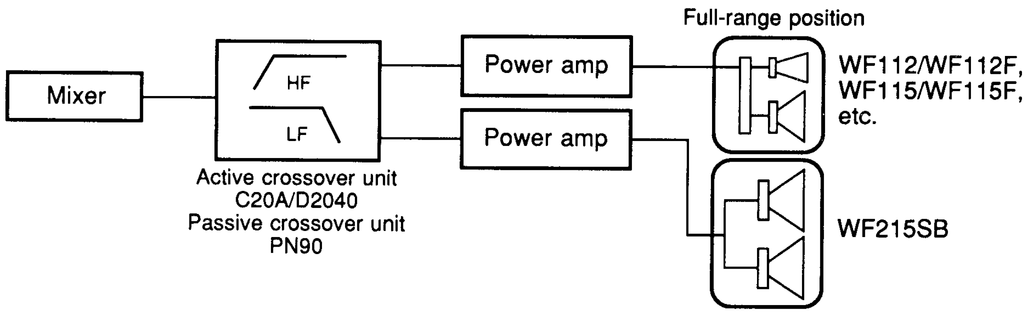


(2) Bi-amp configuration

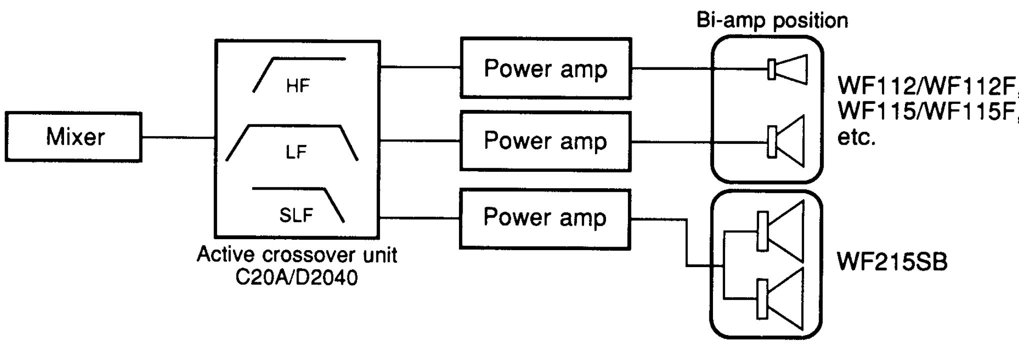


● Using in combination with a subwoofer (recommended crossover frequency for subwoofer: 80 Hz - 90 Hz)

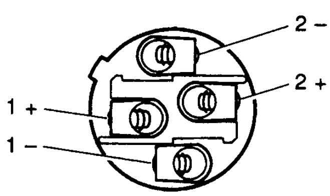
(1) 2-way crossover configuration (PN90 or C20A/D2040)



(2) 3-way crossover configuration (C20A/D2040)



■ Wiring of the speakers to the Neutrik NL4FC connector



Neutrik NL4FC connector

●For full-range operation

1 +	+
1 –	–
2 +	
2 –	

●For bi-amp operation

1 +	LF +
1 –	LF –
2 +	HF +
2 –	HF –

●Subwoofer

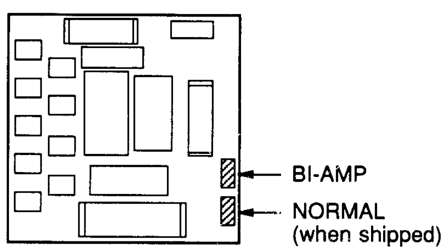
Speaker 1			Speaker 2	
1 +	+	Link	2 +	+
1 –	–	Link	2 –	–

* 1 + and 2 + as well as 1 – and 2 – are linked in the circuit. When the link is disabled, each speaker works independently.

■ Bi-amp drive

The speaker system (WF206/WF112/WF112F/WF115/ WF115F/ WF112M) can also be used for bi-amp drive.

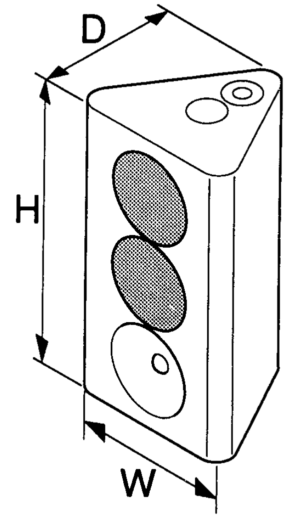
* To use in bi-amp configuration, pull out the built-in crossover network connector from the NORMAL terminal and reconnect it to the BI-AMP terminal.



Specifications

● WF206

Frequency range	50 Hz—19 kHz
Power capacity	NOISE : 100W (IEC 268-5) PROGRAM : 200W MAX : 400W
Nominal impedance	4 Ω
Sensitivity	92 dB (W•m)
Nominal Dispersion	Horizontal : 105° Vertical : 105°
Crossover Frequency	2.2 kHz
Connectors	Neutrik NL4MP-R x 2
Speaker unit	LF : 6.5" (JAY3100) x 2 HF : 2" HF Driver (JAY2080) x 1
Enclosure	Bass reflex type
Dimensions (W x H x D)	289 x 546 x 258 mm (11-3/8"x21-1/2"x10-3/16")
Weight	13 kg (28.7 lbs.)



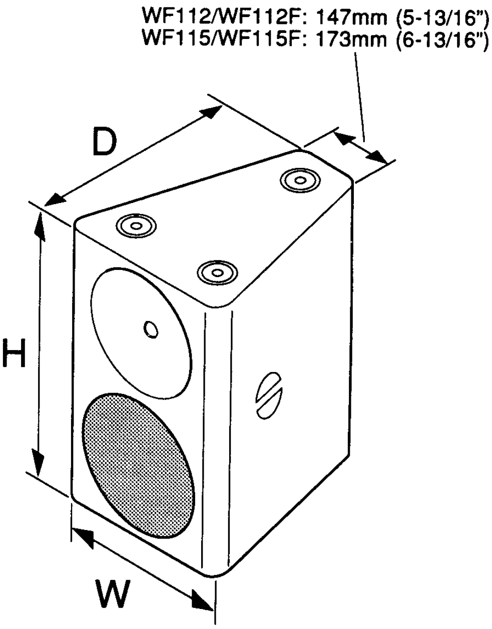
WF206

● WF112/WF112F

Frequency range	45 Hz—19 kHz
Power capacity	NOISE : 200W (IEC 268-5) PROGRAM : 400W MAX : 800W
Nominal impedance	8 Ω
Sensitivity	96 dB (W•m)
Nominal Dispersion	Horizontal : 75° Vertical : 75°
Crossover Frequency	1.5 kHz
Connectors	Neutrik NL4MP-R x 2
Speaker unit	LF : 12" (JAY5090) x 1 HF : 2" HF Driver (JAY2080) x 1
Enclosure	Bass reflex type
Dimensions (W x H x D)	404 x 641 x 508 mm (15-7/8"x25-1/4"x20")
Weight	WF112 : 22.2 kg (48.9 lbs.) WF112F: 25 kg (55.1 lbs.)

● WF115/WF115F

Frequency range	45 Hz—19 kHz
Power capacity	NOISE : 200W (IEC 268-5) PROGRAM : 400W MAX : 800W
Nominal impedance	8 Ω
Sensitivity	97 dB (W•m)
Nominal Dispersion	Horizontal : 60° Vertical : 60°
Crossover Frequency	1.5 kHz
Connectors	Neutrik NL4MP-R x 2
Speaker unit	LF : 15" (JAY6080) x 1 HF : 2" HF Driver (JAY2080) x 1
Enclosure	Bass reflex type
Dimensions (W x H x D)	467 x 851 x 578 mm (18-3/8"x33-1/2"x22-3/4")
Weight	WF115 : 46.2 kg (101.8 lbs.) WF115F: 49 kg (108 lbs.)

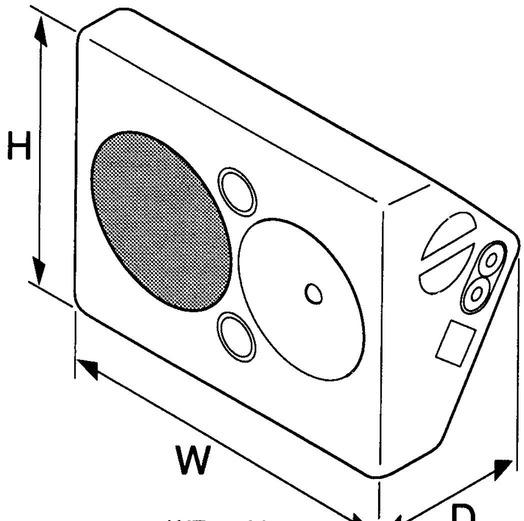


WF112/WF112F/WF115/WF115F

* The WF112/WF115 is not equipped with pan fittings, while the otherwise identical model WF112F/WF115F comes with pan fittings.

● WF112M

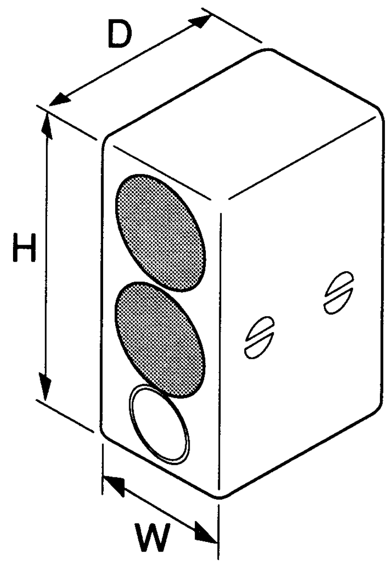
Frequency range	50 Hz—19 kHz
Power capacity	NOISE : 200W (IEC 268-5)
	PROGRAM : 400W
	MAX : 800W
Nominal impedance	8 Ω
Sensitivity	96 dB (W•m)
Nominal Dispersion	Horizontal : 75°
	Vertical : 75°
Crossover Frequency	1.5 kHz
Connectors	Neutrik NL4MP-R x 2
Speaker unit	LF : 12" (JAY5090) x 1
	HF : 2" HF Driver (JAY2080) x 1
Enclosure	Bass reflex type
Dimensions (W x H x D)	660 x 533 x 292 mm (26"x21"x11-1/2")
Weight	24 kg (52.9 lbs.)



WF112M

● WF215SB

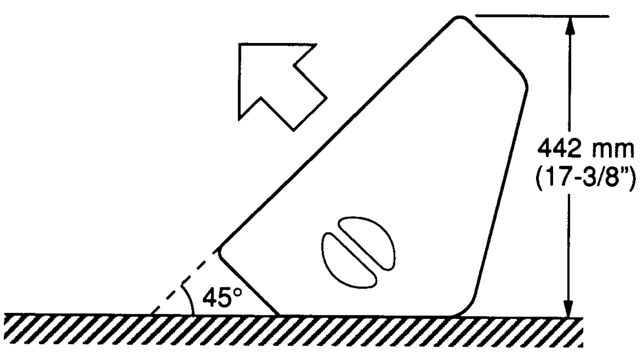
Frequency range	25 Hz—250 kHz
Power capacity	NOISE : 400W (IEC 268-5)
	PROGRAM : 800W
	MAX : 1600W
Nominal impedance	4 Ω
Sensitivity	96 dB (W•m)
Connectors	Neutrik NL4MP-R x 2
Speaker unit	LF : 15" (JAY6091) x 2
Enclosure	Bass reflex type
Dimensions (W x H x D)	467 x 1067 x 660 mm (18-3/8"x42"x26")
Weight	54 kg (119 lbs.)

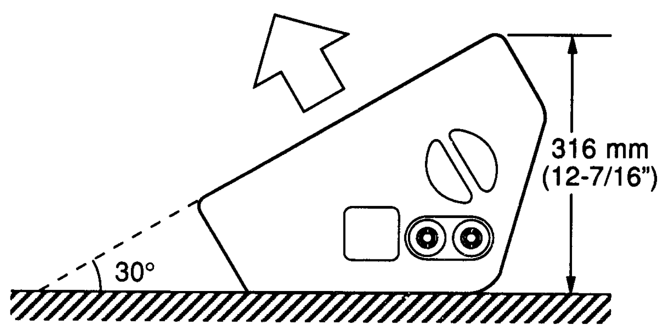


WF215SB

■ Placement of the WF112M

The monitor speaker system WF112M can be placed on either rear surface according to the distance to the player and/or the listening height of the monitoring sound engineer.





Hanging Hook

■ Installation hardware

● **WF112F/WF115F pan fitting (already mounted on the cabinet)**

Made by Aeroquip corp. (U.S.A.) #32206 x 6 pieces (3 for top of the cabinet, 3 for bottom of the cabinet)

● **WF112F/WF115F hanging hook (optional)**

Select one of the following five types distributed by Sound Manufacturing Inc. (U.S.A.) depending on usage.

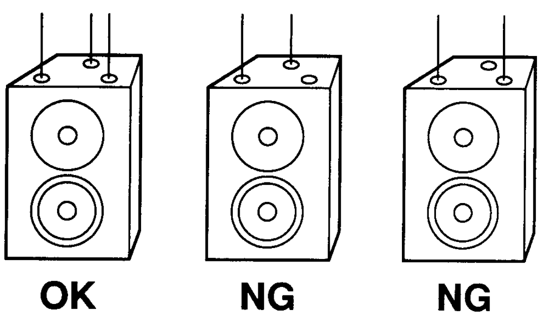
• SM-10 • SM-11 • SM-18 • SM-19 • SM-20

* Refer to the next page for the specifications of each model.

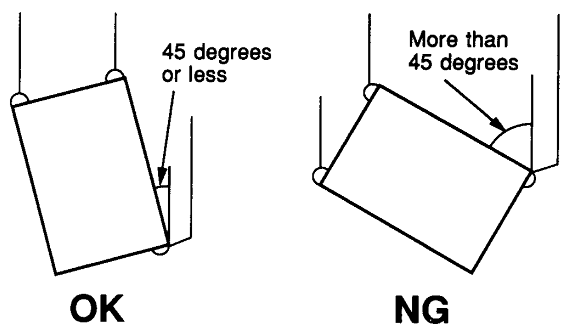
Please consult a professional regarding a suspended installation that is safe, and appropriate for your environment.

■ Standards and requirements for suspended installation

1. Be sure to hang the unit at 3 points. (Figure 1)
2. Tensile strength of the hardware attached to the WF112F/WF115F is 1,200 kg (measured by Yamaha). Be sure to maintain a safety factor of 7 or higher.
   1,200 kg ÷ 7 (safety factor) = 171 kg
   Do not apply a load of 171 kg or more.
3. Inclination angle should be 45 degrees or less. (Figure 2)
4. Do not hang more than 6 (WF112F)/3 (WF115F) units in a row.
5. Make sure that the wire rope, ceiling structure, and hanging hardware are sufficiently strong.
   Note: The values described above are for your reference.



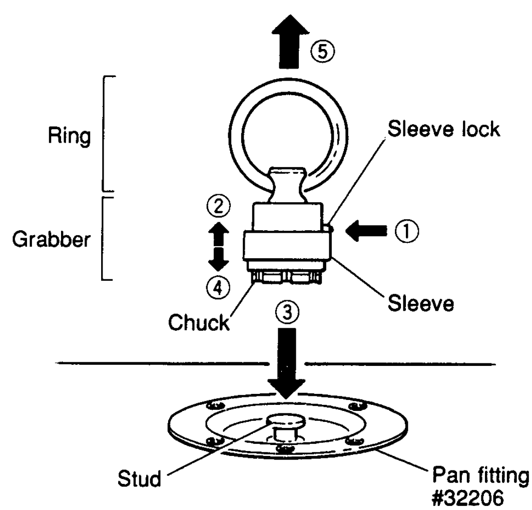
(Figure 1: Be sure to hang at three points)



(Figure 2: Inclination angle should be 45 degrees or less)

■ Installing the hanging hardware to the pan fitting

① Push in the sleeve lock on the grabber.
② Lift up the sleeve to release the chuck.
③ Attach the chuck onto the pan fitting stud.
④ Push down the sleeve until the sleeve lock completely clears the sleeve.
⑤ Pull the ring and confirm that the chuck locks the stud completely.



■ Periodic maintenance and check

The parts may sometimes be subject to deterioration due to wear or corrosion. Carry out periodic maintenance and check for safety.

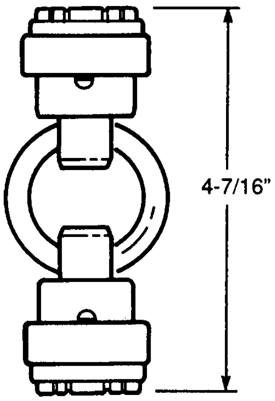
■ Optional hanging hooks for WF112F/WF115F

Please purchase hanging hooks at an authorized Yamaha dealer/distributor.

SM-10

(GRABBER/RING/GRABBER)

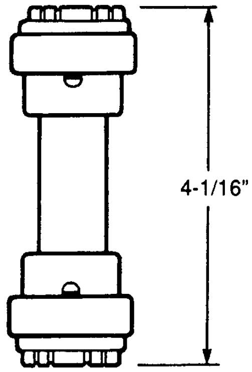
This is useful for a flexible connection such as when the inclination of the upper and lower speaker units is different.



SM-11

(GRABBER/STUD/GRABBER)

This is used to completely fix the upper and lower speaker units.

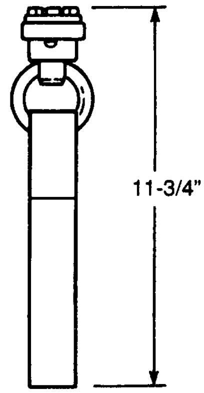


SM-18

(GRABBER/LOOP STRAP)

Use this when you need to move the speaker.

* Do not use the SM-18 for suspended installation.

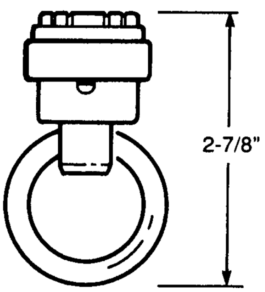


SM-19

(GRABBER/RING)

This is most frequently used for suspended installation. Pass a steel cable made especially for suspended installation through the ring.

* Do not use a cloth belt for permanent installation.

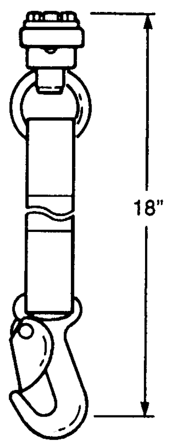


SM-20

(GRABBER/STRAP/18" HOOK)

This is composed of a strong belt and steel hook, allowing a variety of temporary settings.

* Do not use the SM-20 for permanent installation.



Manufacturer :

AEROQUIP CORPORATION
JACKSON, MICHIGAN, U.S.A.
49203-1972

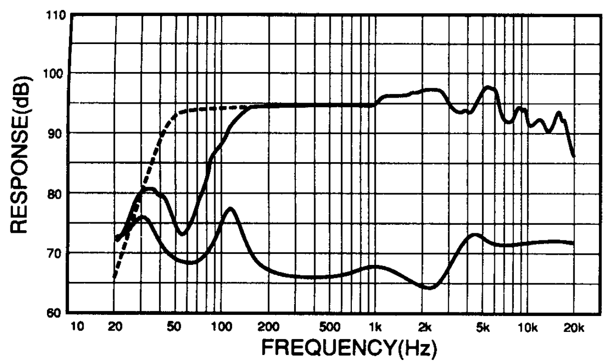
Distributor :

Sound Manufacturing Inc.
N. Hollywood, California, 91605,
U.S.A.

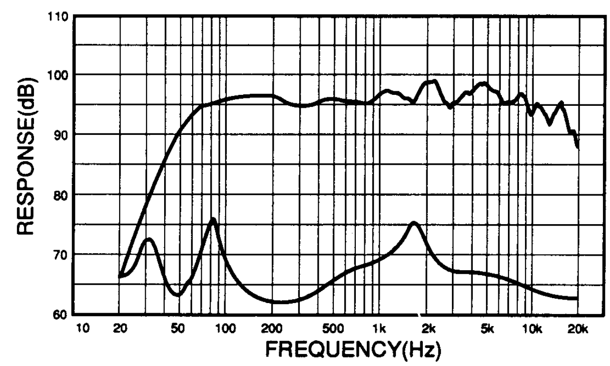
Technical Data / Graphiques / Leistungskurven

■ Frequency Response / Impedance
Réponse de fréquence / impédance
Frequenzgang / Impedanz

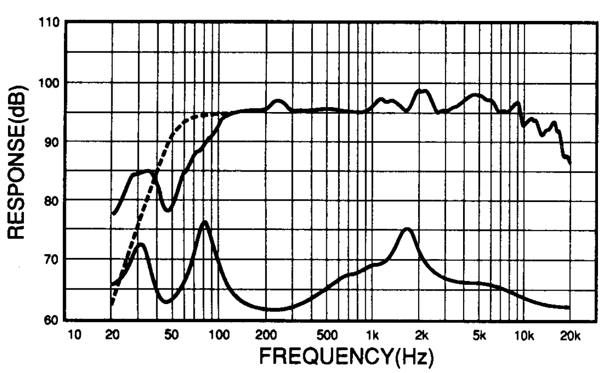
● **WF206** (2.83V 1m)



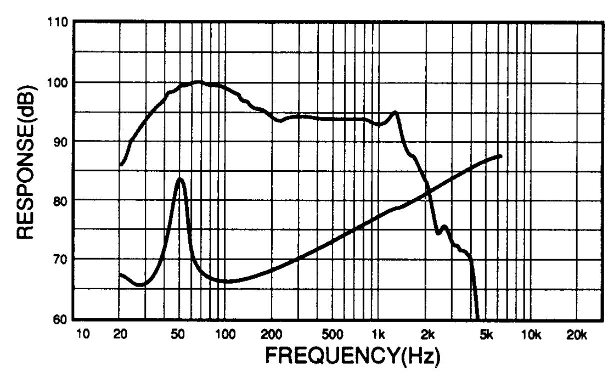
● **WF112M** (2.83V 1m)



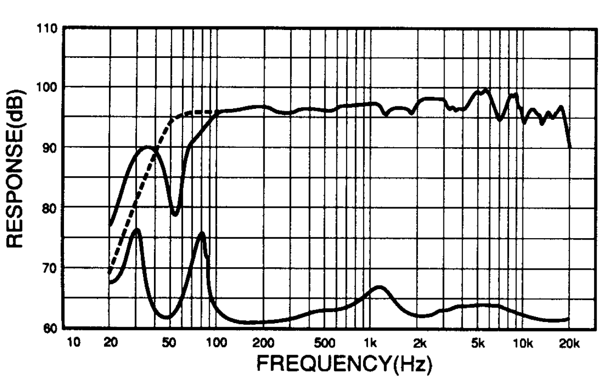
● **WF112 / WF112F** (2.83V 1m)



● **WF215SB** (2.83V 1m)



● **WF115 / WF115F** (2.83V 1m)



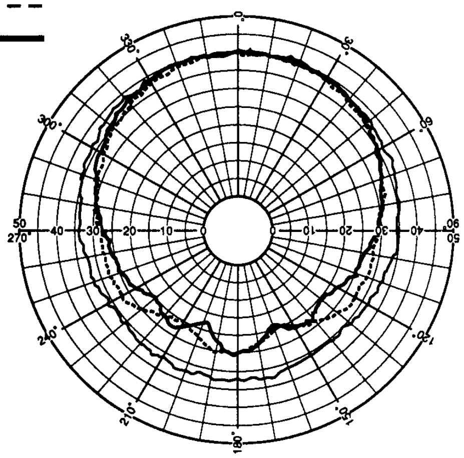
Note: The frequency response was determined using 2π spatial measurement data.
The dotted line shows the response of the WF206, WF112/WF112F, WF115/WF115F during actual use with the added low-frequency range sound pressure from the rear port.

Remarque: La réponse en fréquence a été déterminée en utilisant les données de mesure spatiale 2π.
Le trait en pointillé indique la réponse en utilisation réelle des enceintes WF206, WF112/WF112F, WF115/WF115F avec la pression acoustique de basse fréquence en provenance du point d'accès arrière.

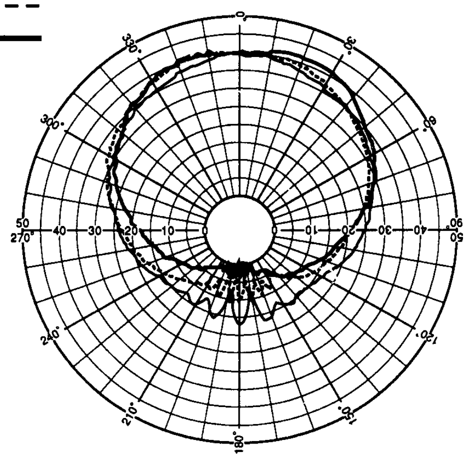
Hinweis: Der Frequenzgang wurde durch 2-π-Messung im Raum ermittelt.
Die gestrichelte Kurve entspricht dem Frequenzgang des WF206, WF112/WF112F, WF115/WF115F bei tatsächlichem Einsatz (einschließlich des über die Öffnung an der Rückseite abgestrahlten Schalldrucks der Baßfrequenzen).

■ Horizontal directivity
Directivité horizontale
Horizontale Direktivität

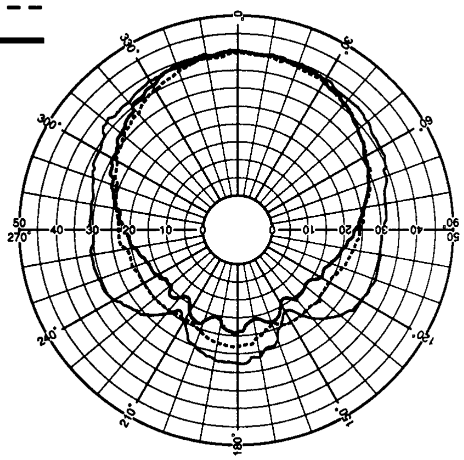
● WF206
- 500 Hz ——
- 1 kHz - - -
- 2 kHz ▬▬



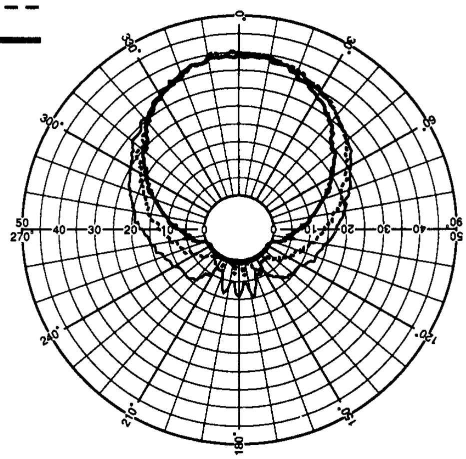
● WF206
- 4 kHz ——
- 8 kHz - - -
- 16 kHz ▬▬



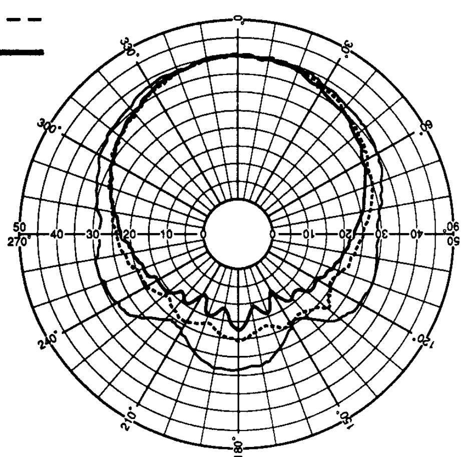
● WF112/WF112F
- 500 Hz ——
- 1 kHz - - -
- 2 kHz ▬▬



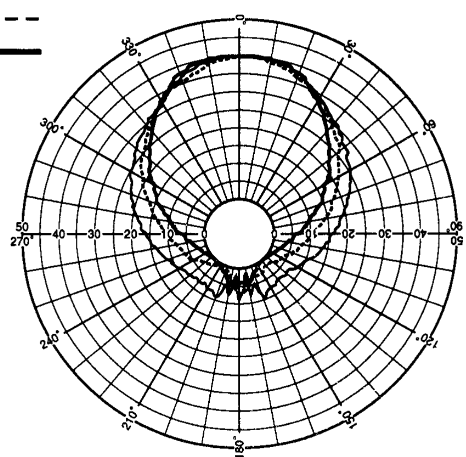
● WF112/WF112F
- 4 kHz ——
- 8 kHz - - -
- 16 kHz ▬▬



● WF115/WF115F
- 500 Hz ——
- 1 kHz - - -
- 2 kHz ▬▬

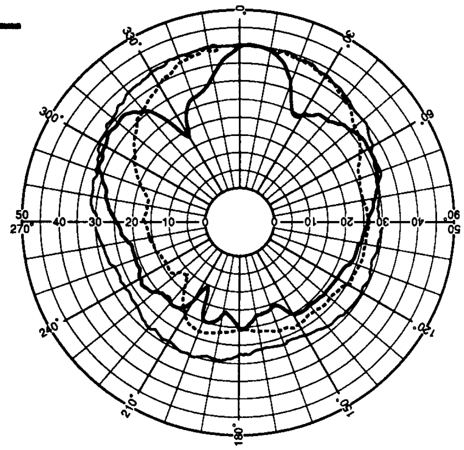


● WF115/WF115F
- 4 kHz ——
- 8 kHz - - -
- 16 kHz ▬▬

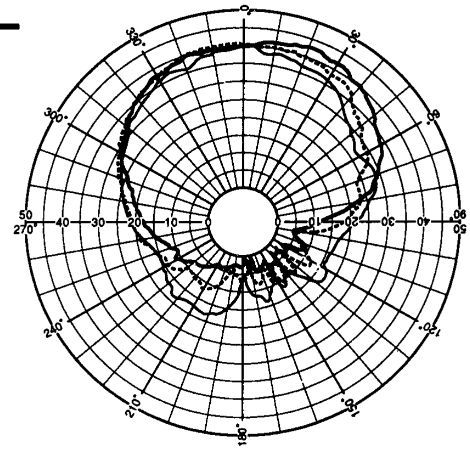


■ Vertical directivity
Directivité verticale
Vertikale Direktivität

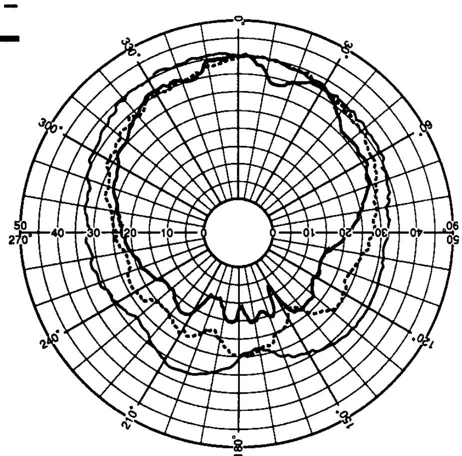
● **WF206**
- 500 Hz ———
- 1 kHz - - -
- 2 kHz ▬▬▬



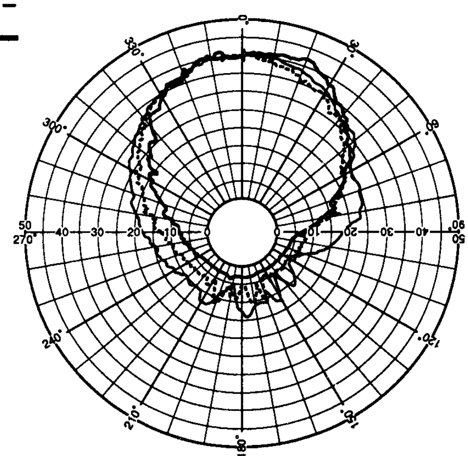
● **WF206**
- 4 kHz ———
- 8 kHz - - -
- 16 kHz ▬▬▬



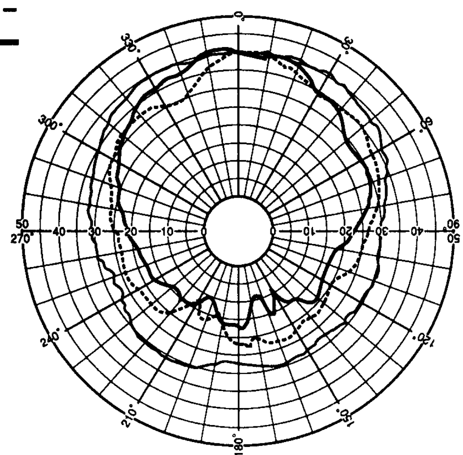
● **WF112/WF112F**
- 500 Hz ———
- 1 kHz - - -
- 2 kHz ▬▬▬



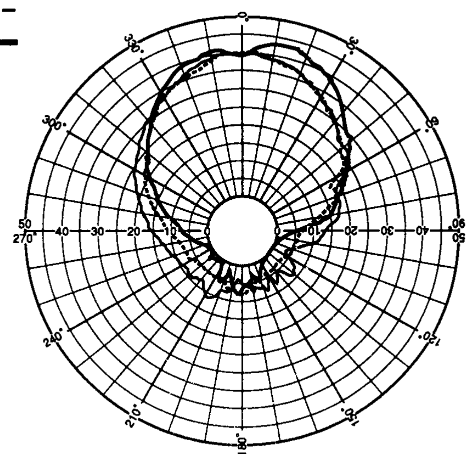
● **WF112/WF112F**
- 4 kHz ———
- 8 kHz - - -
- 16 kHz ▬▬▬



● **WF115/WF115F**
- 500 Hz ———
- 1 kHz - - -
- 2 kHz ▬▬▬



● **WF115/WF115F**
- 4 kHz ———
- 8 kHz - - -
- 16 kHz ▬▬▬



YAMAHA

CJY0320 R0 1 CP 94 04 Printed in USA

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